

Amendment to the Claims

1-20. (Cancelled)

21. (New) A calibration jig for a component recognition device to be used in making a coordinate system within a view field of the component recognition device provided for confirming an attitude of a component before the component is mounted to a to-be-mounted object, and agreement with a coordinate system of a component holding device for holding and mounting the component to the object,

said calibration jig comprising:

a plate having a flat face for reflecting light to be received by the component recognition device, and a recognition part for obtaining a point on the flat face,

said recognition part being located at the flat face, and the point being necessary for confirming the agreement of the coordinate systems,

said recognition part being arranged within a periphery of the flat face, and having a light reflectance that is different from that of the flat face; and

a reinforcing member for reinforcing said plate, said reinforcing member being disposed at an opposite face of said plate relative to the flat face,

said recognition part comprising an opening formed in the flat face,

wherein said reinforcing member has a recessed part that is formed so as to correspond to the opening, the recessed part permitting the component recognition device to recognize a clear outline of the opening, and

wherein the recessed part of the reinforcing member has an inner face that is colored in order to suppress the reflection of light.

22. (New) A calibration jig for a component recognition device as claimed in claim 21, wherein said recessed part is larger in plane than the opening.

23. (New) A calibration jig for a component recognition device as claimed in claim 21, wherein the flat face has a rectangular shape, and the opening comprises at least four openings formed at four points that correspond to four corners of the flat face.

24. (New) A calibration jig for a component recognition device as claimed in claim 21, wherein the opening comprises at least one opening formed at an optional position on the flat face which has a rectangular shape.

25. (New) A component mounting apparatus for handling the calibration jig for the component recognition device as claimed in claim 21.

26. (New) A component mounting apparatus for handling the calibration jig for the component recognition device as claimed in claim 22.

27. (New) A component mounting apparatus for handling the calibration jig for the component recognition device as claimed in claim 23.

28. (New) A component mounting apparatus for handling the calibration jig for the component recognition device as claimed in claim 24.

29. (New) A component mounting apparatus as claimed in claim 25, wherein the component recognition device is operable to illuminate the flat face of the calibration jig thus recognizing the recognition part, and is provided with an image processing device which obtains a position of the recognition part through the recognition of the recognition part, calculates at least a resolution of the component recognition device based on the obtained position, and calculates a rotational angle representing a shift of the coordinate system of the component recognition device relative to the coordinate system of the component holding device.

30. (New) A component mounting apparatus as claimed in claim 26, wherein the component recognition device is operable to illuminate the flat face of the calibration jig thus recognizing the recognition part, and is provided with an image processing device which is operable to obtain a position of the recognition part through the recognition of the recognition part, calculate at least a resolution of the component recognition device based on a result of the obtained position, and calculate a rotational angle representing a shift

of the coordinate system of the component recognition device relative to the coordinate system of the component holding device.

31. (New) A component mounting apparatus as claimed in claim 27, wherein the component recognition device is operable to illuminate the flat face of the calibration jig thus recognizing the recognition part, and is provided with an image processing device which is operable to obtain a position of the recognition part through the recognition of the recognition part, calculate at least a resolution of the component recognition device based on a result of the obtained position, and calculate a rotational angle representing a shift of the coordinate system of the component recognition device relative to the coordinate system of the component holding device.

32. (New) A component mounting apparatus as claimed in claim 28, wherein the component recognition device is operable to illuminate the flat face of the calibration jig thus recognizing the recognition part, and is provided with an image processing device which is operable to obtain a position of the recognition part through the recognition of the recognition part, calculate at least a resolution of the component recognition device based on a result of the obtained position, and calculate a rotational angle representing a shift of the coordinate system of the component recognition device relative to the coordinate system of the component holding device.

33. (New) A component recognition calibration method using the calibration jig for the component recognition device as claimed in claim 21,

the method comprising:

illuminating the flat face of the calibration jig;

recognizing the recognition part by the component recognition device thus obtaining a position of the recognition part;

calculating a resolution of the component recognition device on the basis of the obtained position of the recognition part; and

calculating a rotational angle representing a shift of the coordinate system of the component recognition device relative to the coordinate system of the component holding device.

34. (New) A component recognition calibration method using the calibration jig for the component recognition device as claimed in claim 22,

the method comprising:

illuminating the flat face of the calibration jig;

recognizing the recognition part by the component recognition device thus obtaining a position of the recognition part;

calculating a resolution of the component recognition device on a basis of the obtained position of the recognition part; and

calculating a rotational angle representing a shift of the coordinate system of the component recognition device relative to the coordinate system of the component holding device.

35. (New) A component recognition calibration method using the calibration jig for the component recognition device as claimed in claim 23,

the method comprising:

illuminating the flat face of the calibration jig;

recognizing the recognition part by the component recognition device thus obtaining a position of the recognition part;

calculating a resolution of the component recognition device on a basis of the obtained position of the recognition part; and

calculating a rotational angle representing a shift of the coordinate system of the component recognition device relative to the coordinate system of the component holding device.

36. (New) A component recognition calibration method using the calibration jig for the component recognition device as claimed in claim 24,

the method comprising:

illuminating the flat face of the calibration jig;

recognizing the recognition part by the component recognition device thus obtaining a position of the recognition part;

calculating a resolution of the component recognition device on a basis of the obtained position of the recognition part; and

calculating a rotational angle representing a shift of the coordinate system of the component recognition device to the coordinate system of the component holding device.

37. (New) A component recognition calibration method as claimed in claim 33, wherein the calculating of the resolution of the component recognition device and the rotational angle comprises:

obtaining the point to be measured of the calibration jig on the basis of the obtained position of the recognition part;

thereafter, moving the calibration jig over the component recognition device in X, Y directions orthogonal to each other on a plane;

calculating the resolution of the component recognition device from a movement distance of the point to be measured and an actual movement distance, the movement distance being obtained by the component recognition device based on a locus of the point to be measured; and

calculating the rotational angle from a shift of a movement direction in the X or Y direction of the point to be measured to a regulated X-axis or Y-axis.

38. (New) A component recognition calibration method as claimed in claim 34, wherein the calculating of the resolution of the component recognition device and the rotational angle comprises:

obtaining the point to be measured of the calibration jig on the basis of the obtained position of the recognition part;

thereafter, moving the calibration jig over the component recognition device in X, Y directions orthogonal to each other on a plane;

calculating the resolution of the component recognition device from a movement distance of the point to be measured and an actual movement distance, the movement distance being obtained by the component recognition device based on a locus of the point to be measured; and

calculating the rotational angle from a shift of a movement direction in the X or Y direction of the point to be measured to a regulated X-axis or Y-axis.

39. (New) A component recognition calibration method as claimed in claim 35, wherein the calculating of the resolution of the component recognition device and the rotational angle comprises:

obtaining the point to be measured of the calibration jig on the basis of the obtained position of the recognition part;

thereafter, moving the calibration jig over the component recognition device in X, Y directions orthogonal to each other on a plane;

calculating the resolution of the component recognition device from a movement distance of the point to be measured and an actual movement distance, the movement distance being obtained by the component recognition device based on a locus of the point to be measured; and

calculating the rotational angle from a shift of a movement direction in the X or Y direction of the point to be measured to a regulated X-axis or Y-axis.

40. (New) A component recognition calibration method as claimed in claim 36, wherein the calculating of the resolution of the component recognition device and the rotational angle comprises:

obtaining the point to be measured of the calibration jig on the basis of the obtained position of the recognition part;

thereafter, moving the calibration jig over the component recognition device in X, Y directions orthogonal to each other on a plane;

calculating the resolution of the component recognition device from a movement distance of the point to be measured and an actual movement distance, the movement distance being obtained by the component recognition device based on a locus of the point to be measured; and

calculating the rotational angle from a shift of a movement direction in the X or Y direction of the point to be measured to a regulated X-axis or Y-axis.